

An **Appendix** including amended drawing figures is attached following page 15 of this paper.

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of the Claims

1. (Currently Amended) A system for generating a map of a surface, comprising:
 - a global position transmitter;
 - a vehicle, disposed over the surface;
 - an elevation measurement unit, secured to the vehicle;
 - a global positioning antenna, secured to the vehicle;
 - an attitude measurement unit, secured to the vehicle;
 - an imaging array, secured to the vehicle, comprising:
 - a housing;
 - an aperture, disposed in the housing, having an intersection area therein;
 - a first imaging sensor, coupled to the housing, having a first focal axis passing through the aperture within the intersection area, generating a first array of pixels, wherein the first array of pixels is at least two dimensional; and
 - a second imaging sensor, coupled to the housing and offset from the first imaging sensor, having a second focal axis passing through the aperture and intersecting the first focal axis within the intersection area, generating a second array of pixels, wherein the second array of pixels is at least two dimensional;

a computer, connected to the elevation measurement unit, the global positioning antenna, the attitude measurement unit and first and second imaging sensors; correlating at least a portion of the image data from the first and second imaging sensors to a portion of the surface based on input from one or more of: the elevation measurement unit, the global positioning antenna and the attitude measurement unit.

2. (Previously Presented) The system of claim 1 further comprising a third imaging sensor, coupled to the housing and offset from the first imaging sensor, having a third focal axis passing through the aperture and intersecting the first focal axis within the intersection area.

3. (Original) The system of claim 2 wherein the focal axis of the third imaging sensor lies in a common plane with the focal axes of the first and second imaging sensors.

4. (Previously Presented) The system of claim 2 wherein the focal axes of the first and second imaging sensors lie in a first common plane and the focal axis of the third imaging sensor lies in a plane orthogonal to the first common plane.

5. (Original) The system of claim 1 wherein the focal axis of the first imaging sensor is disposed vertically.

6. (Previously Presented) The system of claim 5 wherein the focal axis of the second imaging sensor is disposed in a first plane with, and at a first angle to, the focal axis of the first imaging sensor and a focal axis of a third imaging sensor is disposed opposite the second imaging sensor from the first imaging sensor in the first plane and at a second angle having the same magnitude as the first angle.

7. (Original) The system of claim 6 further comprising fifth and sixth imaging sensors disposed on opposite sides of the first imaging sensor, having focal axes disposed

in a second plane common with the focal axis of the first imaging sensor orthogonal to the first common plane and at third and fourth angles from the focal axis of the first imaging sensor having the same magnitude.

8. (Currently Amended) A system for generating a map of a surface, comprising:
- a global position transmitter;
 - a vehicle, disposed over the surface;
 - an elevation measurement unit, secured to the vehicle;
 - a global positioning antenna, secured to the vehicle;
 - an attitude measurement unit, secured to the vehicle;
 - a first imaging sensor, secured to the vehicle, having a focal axis disposed in the direction of the surface, generating an image comprising an array of pixels, wherein the array of pixels is at least two dimensional;
 - a computer, connected to the elevation measurement unit, the global positioning antenna, the attitude measurement unit and the first imaging sensor; generating a calculated longitude and calculated latitude value for a coordinate corresponding to at least one pixel in the array based on input from one or more of: the elevation measurement unit, the global positioning antenna and the attitude measurement unit.
9. (Original) The system of claim 8 wherein the global position transmitter is satellite-based.
10. (Original) The system of claim 8 wherein the global position transmitter is ground-based.
11. (Original) The system of claim 8 wherein the elevation measurement is a LIDAR apparatus.

12. (Original) The system of claim 8 wherein the attitude measurement unit is a gyroscope.

13. (Original) The system of claim 8 wherein the focal axis of the first imaging sensor is vertical and passes through an aperture, and wherein the system further comprises:

a second imaging sensor, coupled to the vehicle and offset from the first imaging sensor, having a second focal axis passing through the aperture and intersecting the first focal axis within an intersection area, and

a third imaging sensor, coupled to the vehicle and offset from the first imaging sensor opposite the second imaging sensor, having a third focal axis passing through the aperture and intersecting the first focal axis within the intersection area.

14. (Original) The system of claim 13 wherein the vehicle has a direction vector, and wherein the focal axis of the second imaging sensor lies in a plane orthogonal to the direction vector of the vehicle.

15. (Currently Amended) A system for generating a map of a surface, comprising:

a global position transmitter;

a vehicle, disposed over the surface;

an elevation measurement unit, secured to the vehicle;

a global positioning antenna, secured to the vehicle;

an attitude measurement unit, secured to the vehicle;

an imaging array, secured to the vehicle, comprising:

a housing;

an aperture, disposed in the housing, having an intersection area therein;
a first imaging sensor, coupled to the housing, having a focal axis passing through the aperture within the intersection area, generating a first array of pixels, wherein the first array of pixels is at least two dimensional; and

a second imaging sensor, coupled to the housing and offset from the first imaging sensor, having a second focal axis passing through the aperture and intersecting the first focal axis within the intersection area, generating a second array of pixels, wherein the second array of pixels is at least two dimensional;

a computer, connected to one or more of: the elevation measurement unit, the global positioning antenna, the attitude measurement unit, the first imaging sensor and the second imaging sensor; generating a mosaic from the first array of pixels and the second array of pixels; calculating the true longitude and true latitude of at least one point on the surface corresponding to at least one pixel in the mosaic based on the input from one or more of: the elevation measurement unit, the global positioning antenna and the attitude measurement unit.

16. (Previously Presented) The system of claim 15 wherein further comprising a third imaging sensor, coupled to the housing and offset from the first imaging sensor, having a third focal axis passing through the aperture and intersecting the first focal axis within the intersection area.

17. (Original) The system of claim 16 wherein the focal axis of the third imaging sensor lies in a common plane with the focal axes of the first and second imaging sensors.

18. (Original) The system of claim 16 wherein the focal axes of the first and second imaging sensors lie in a first common plane and the focal axis of the third imaging sensor lies in a plane orthogonal to the first common plane.

19. (Original) The system of claim 16 wherein the focal axis of the third imaging sensor lies in a first common plane with the focal axes of the first and second imaging sensors and wherein the system further comprises a fourth imaging sensor having a focal axis lying in a plane orthogonal to the first common plane.

20. (Original) The system of claim 16 wherein the focal axis of the third imaging sensor lies in a first common plane with the focal axes of the first and second imaging sensors and the system further comprises fourth and fifth imaging sensors having focal axes lying in the first common plane and intersecting the focal axis of the first imaging sensor within the intersection area.

21. (Previously Presented) The system of claim 2, wherein the second focal axis and the third focal axis are the same.

22. (Previously Presented) The system of claim 16, wherein the second focal axis and the third focal axis are the same.

Amendments to the Drawings

The attached sheet of drawings includes changes to Figures 1-18. The sheet that includes Figure 1 now replaces the replacement sheet filed on March 2, 2005 that included Figure 1. In Figure 1, the legends as originally filed have been reincorporated without prejudice and in the interest of furthering prosecution. In Figure 1, the shape of the boxes have been changed and repositioned for reasons of clarity and stylistic preference. No new matter has been added to Figure 1.

The sheet that includes Figure 1A now replaces the new sheet filed on March 2, 2005 that included Figure 1A. In Figure 1A, the legends as originally filed have been reincorporated without prejudice and in the interest of furthering prosecution. Additionally, the sheet numbering has been fixed to accurately reflect that this is sheet 2/14. No new matter has been added to Figure 1A.

The sheet that includes Figure 1B now replaces the new sheet filed on March 2, 2005 that included Figure 1B. In Figure 1B, the legends as originally filed have been reincorporated without prejudice and in the interest of furthering prosecution. Additionally, the sheet numbering has been fixed to accurately reflect that this is sheet 3/14. No new matter has been added to Figure 1B.

The sheet that includes Figure 2 now replaces the replacement sheet filed on March 2, 2005 that included Figure 2. In Figure 2, the legends as originally filed have been reincorporated without prejudice and in the interest of furthering prosecution. Additionally, the sheet numbering has been fixed to accurately reflect that this is sheet 4/14. No new matter has been added to Figure 2.

The sheet that includes Figures 3 and 4 now replaces the replacement sheet filed on March 2, 2005 that included Figures 3 and 4. The sheet numbering has been fixed to accurately reflect that this is sheet 5/14. No new matter has been added to Figures 3 and 4.

The sheet that includes Figure 5 now replaces the replacement sheet filed on March 2, 2005 that included Figure 5. The sheet numbering has been fixed to accurately reflect that this is sheet 6/14. No new matter has been added to Figure 5.

The sheet that includes Figures 6 and 7 now replaces the replacement sheet filed on March 2, 2005 that included Figures 6 and 7. The sheet numbering has been fixed to accurately reflect that this is sheet 7/14. No new matter has been added to Figures 6 and 7.

The sheet that includes Figure 8 now replaces the replacement sheet filed on March 2, 2005 that included Figure 8. The sheet numbering has been fixed to accurately reflect that this is sheet 8/14. No new matter has been added to Figure 8.

The sheet that includes Figure 9 now replaces the replacement sheet filed on March 2, 2005 that included Figure 9. The sheet numbering has been fixed to accurately reflect that this is sheet 9/14. No new matter has been added to Figure 9.

The sheet that includes Figure 10 now replaces the replacement sheet filed on March 2, 2005 that included Figure 10. In Figure 10, the legends as originally filed have been reincorporated without prejudice and in the interest of furthering prosecution. Additionally, the sheet numbering has been fixed to accurately reflect that this is sheet 10/14. No new matter has been added to Figure 10.

The sheet that includes Figures 11, 12, and 13 now replaces the replacement sheet filed on March 2, 2005 that included Figures 11, 12, and 13. In Figures 11, 12, and 13, the legends as originally filed have been reincorporated without prejudice and in the interest of furthering prosecution. Additionally, the sheet numbering has been fixed to accurately reflect that this is sheet 11/14. No new matter has been added to Figures 11, 12, and 13.

The sheet that includes Figures 14 and 15 now replaces the replacement sheet filed on March 2, 2005 that included Figures 14 and 15. In Figures 14 and 15, the legends as originally filed have been reincorporated without prejudice and in the interest of furthering prosecution. Additionally, the sheet numbering has been fixed to accurately reflect that this is sheet 12/14. No new matter has been added to Figures 14 and 15.

The sheet that includes Figures 16 and 17 now replaces the replacement sheet filed on March 2, 2005 that included Figures 14 and 15. The sheet numbering has been fixed to accurately reflect that this is sheet 13/14. No new matter has been added to Figures 16 and 17.

The sheet that includes Figure 18 now replaces the replacement sheet filed on March 2, 2005 that included Figure 18. In Figure 18, the legends as originally filed have been reincorporated without prejudice and in the interest of furthering prosecution. Additionally, the sheet numbering has been fixed to accurately reflect that this is sheet 14/14. No new matter has been added to Figure 18.